Appendix E
Transportation Analysis for the Evaluation of the Northgate Plan

Introduction

Sources of traffic data for this analysis include: available automatic traffic count data collected by the City of Seattle at several locations throughout the Northgate planning area; 1998 PM peak hour traffic count data collected by The Transpo Group for the Mall GDP; and traffic volumes from the Washington State Department of Transportation for ramps and freeways.

The automatic traffic count data are contained in the City's traffic volume database. Traffic counts generally occur for one week in a given location, and represent traffic volumes approaching intersections along arterials. The recording devices provide daily and peak hour traffic information, but not turning movements at individual intersection or level of service evaluation. The City monitors certain locations every year, but data collection for a majority of the monitored locations occurs every two to four years. Much of this analysis is based on volumes approaching intersections at numerous locations. A simpler analysis of average annual weekday daily traffic at fewer locations is provided on page 15 of this appendix.

The baseline traffic information from 1988 is based on the "Northgate Area Transportation Plan Existing Conditions – Final Report" (June 1989) by the Seattle Engineering Department, which also provided the baseline existing traffic volume data for the Northgate Area Comprehensive Plan Draft EIS (December 1991). Therefore, the discussion of traffic growth in this report uses the same timeframe as that analyzed in the EIS rather than discussing changes since 1993 when the plan was adopted.

The Transpo Group's data were collected for the PM peak hour at 22 locations on three different days in January 1998. This covered the area in the Mall vicinity, between NE 92nd Street, Northgate Way, Corliss Avenue N. to the west, and 8th Avenue NE to the east. The data include turning movements and level of service evaluation that supplement the City's data.

Changes in Average Weekday Traffic Volumes and PM Peak Hour Volumes Since 1988

Average weekday traffic volumes did not grow consistently throughout the Northgate planning area, and in fact, traffic volumes at some locations were less in 1998 than recorded in 1988. The east-west NE 130th Street corridor experienced the greatest percentage growth in average weekday traffic volumes, while the Northgate Way corridor experienced modest growth, and 5th Avenue NE, Roosevelt Way, and 15th Avenue NE had traffic growth at some intersections but not others. Traffic did not increase evenly in all directions of travel, or evenly throughout the corridor.

The trends in PM peak hour traffic volumes are similar to those described for the average weekday traffic volumes except most growth at specific locations was of a lesser magnitude (in percentage terms) than the daily volumes. This may indicate that traffic growth in several locations is more attributable to growth in non-peak times than peak commuting hours. Also, the

Figure: 1988 Weekday Traffic

Figure: 1988 PM peak hour traffic

Figure: 1998 Change in Traffic--Weekday

1998 Change in Traffic – PM Peak

peak hour data appear to indicate more traffic growth opposing the peak directions of commuting traffic.

The following discussion describes traffic changes over the past ten years within the primary traffic corridors in the planning area.

Northgate Way Corridor East of I-5

Average Weekday Traffic Volumes

Traffic growth along this corridor has been relatively modest since 1988. Average weekday traffic volumes approaching Northgate Way/Roosevelt Way increased by 15 percent between 1988 and 1998, the largest percentage increase in this corridor (see Table E-1). Based on 1997 and 1998 data, the total average weekday traffic volumes approaching Northgate Way/1st Avenue NE and Northgate Way/15th Avenue NE increased only three percent and six percent, respectively. Overall approaching traffic at Northgate Way/8th Avenue NE fell by three percent compared to 1988 volumes, and at the intersection of Northgate Way/5th Avenue NE total average weekday traffic volumes remained essentially the same as 1988 conditions. Another location east of 5th Avenue NE that is monitored annually indicated a five percent increase in average weekday daily traffic volumes since 1988.

Traffic did not increase evenly in all directions of travel, or evenly throughout the corridor. Eastbound traffic along Northgate Way generally grew more than westbound movements, including most notably a 13 percent increase in eastbound movements under I-5 at 1st Avenue NE, and a 26 percent increase approaching Roosevelt Way. The 1st Avenue NE eastbound volumes are partially related to I-5 volumes using this intersection as access to either the Mall or areas east and south, for residential, shopping or employment-oriented destinations. The increase in eastbound volumes at Roosevelt Way could reflect greater commercial/employment activity in the vicinity (such as at the QFC) or possibly residential growth east of Roosevelt Way.

Southbound traffic on streets crossing Northgate Way grew more than northbound movements, including most notably a 24 percent increase on 15th Avenue NE, and a 21 percent increase on Roosevelt Way NE. Northbound movements generally decreased (by 8 to 24 percent) from 1988 volumes, except for a slight increase on 15th Avenue NE. At 1st Avenue NE/Northgate Way, the intersection was reconfigured and a new I-5 ramp constructed to the south, reducing the volume of freeway-bound traffic using the intersection.

PM Peak Hour Volumes

Similar to the daily traffic patterns, the intersection in this corridor with the largest percentage growth in PM peak hour traffic was Northgate Way/Roosevelt Way, at which total volumes approaching the intersection increased by 8 percent since 1988 (see Table E-2). Total PM peak hour volumes approaching the Northgate Way/15th Avenue NE intersection were essentially the same in 1997/1998 as in 1988. Total 1998 PM peak hour volumes approaching the 5th Avenue NE and 1st Avenue NE intersections were both less than recorded in 1988, by 10 percent and 3 percent, respectively.

Table E-1
Average Weekday Daily Traffic Volumes Approaching Intersections, Northgate Way Corridor East of I-5

Intersection	Direction	1988 Avg. Weekday Volumes	1996, 1997 & 1998 Recorded Weekday Volumes	Percent Change Since 1988	Percent Change, all approaching volumes
Northgate Way/1st Ave. NE	NB	18,478	16,907(97)	-9%	+3%
	SB	1,713	1,914(97)	12%	
	EB	20,873	23,513(97)	13%	
	WB	16,056	16,415(97)	2%	
Northgate Way/5th Ave. NE	NB	8,770	7,347	-16%	+0.1%
	SB	4,072	4,293(96)	5%	
	EB	14,364	14,759(96)	3%	
	WB	16,250	17,119	5%	
Northgate Wy/Roosevelt Wy	NB	4,670	4,318	-8%	+15%
	SB	8,705	10,508(97)	21%	
	EB	12,928	16,307(97)	26%	
	WB	8,651	8,897	3%	
Northgate Way/15th Ave. NE	NB	4,135	4,209	2%	+6%
	SB	2,938	3,648(97)	24%	
	EB	8,554	9,065	6%	
	WB	7,617	7,832(97)	3%	

Table E-2
PM Peak Hour Volumes Approaching Intersections, Northgate Way Corridor East of I-5

Intersection	Direction	1988 PM Peak Hour Volume	1996, 1997 & 1998 PM Peak Hour Volume	Percent Change Since 1988	Percent Change, all approaching volumes
Northgate Way/1st Ave. NE	NB	1,738	1,481(97)	-15%	-3%
	SB	133	151(97)	14%	
	EB	1,632	1,695(97)	4%	
	WB	1,155	1,200(97)	4%	
Northgate Way/5th Ave. NE	NB	1,259	883	-30%	-10%
	SB	343	348(96)	1%	
	EB	1,203	1,139(96)	-5%	
	WB	1,119	1,155	3%	
Northgate Wy/Roosevelt Wy	NB	877	544	-38%	8%
	SB	582	761(97)	31%	
	EB	1,223	1,524(97)	25%	
	WB	601	703	17%	
Northgate Way/15th Ave. NE	NB	596	508	-15%	+0.3%
	SB	196	263(97)	34%	
	EB	844	832	-1%	
	WB	540	580(97)	7%	

The trend of increased peak hour traffic near Roosevelt Way/Northgate Way matches the daily traffic trend, and may be attributable to increased commercial activity. The I-5 ramp and reconfiguration of the 1st Avenue NE/Northgate Way intersection helped reduce northbound approaching volumes at this intersection. Also similar to the daily traffic trends was the lesser amount of northbound traffic (the peak travel direction for commuter traffic), and an increase in southbound traffic, opposite to the peak direction of commuter traffic. The pattern of more percentage growth opposite to the peak commute direction is also observed in the east-west traffic along Northgate Way, with greater growth in the westbound traffic during the PM peak hour.

The 1998 PM peak hour traffic counts by Transpo are relatively consistent with the City's data, and provide more detail on directions of travel. At the 1st Avenue NE and 5th Avenue NE intersections with Northgate Way, the 1998 PM peak hour volumes were approximately 9 percent less and 0.5 percent more than the City's 1997/1998 data, respectively. The traffic movement data demonstrate the predominant peak-hour use of Northgate Way as a east-west commuting corridor and through route. At 1st Avenue NE, a majority of northbound traffic (generated by volumes exiting I-5, the Mall and other areas to the south) turned west onto Northgate Way; only about 25 percent turned east onto Northgate Way. Approximately 70 percent of the westbound traffic at the 1st Avenue NE/Northgate Way intersection flowed through without turning, while about 60 percent of the eastbound traffic flowed through without turning. At 5th Avenue NE, approximately 70 percent of the eastbound and westbound traffic on Northgate Way flowed through the intersection without turning. At 8th Avenue NE, 80 to 90 percent of the approaching volumes on Northgate Way flowed through without turning. The Transpo traffic data also illustrate the pattern in the City data of notable volumes in the reverse commute direction.

Northgate Way Corridor West of I-5

Average Weekday Traffic Volumes

West of I-5, average weekday traffic along the Northgate Way corridor grew slightly, including 3 percent and 5 percent increases in eastbound and westbound volumes approaching the Northgate Way/Meridian Avenue N. intersection, respectively (see Table E-3). Another monitoring location on Northgate Way west of Ashworth Avenue N. indicated no growth or slight declines in volumes between 1993 and 1998. At the Meridian Avenue N. intersection, northbound and southbound approaching volumes both declined by approximately 15 percent from 1988 volumes.

PM Peak Hour Volumes

West of I-5, the 1998 PM peak hour traffic volumes eastbound and westbound along Northgate Way were approximately the same as measured in 1988 (see Table E-4). Eastbound and westbound PM peak hour volumes approaching the Northgate Way/Meridian Avenue N. intersection decreased by 3 percent and 1 percent, respectively, from 1988 to 1998. Another monitoring location west of Ashworth Avenue N. indicated slight growth in eastbound volumes and slight decline in westbound volumes between 1993 and 1998. At the Meridian Avenue N.

intersection, northbound and southbound approaching volumes during the PM peak hour both declined by approximately 11 percent from 1988 volumes.

The 1998 PM peak hour traffic counts by Transpo at Corliss Avenue N./NE Northgate Way (the off-ramp and on-ramp routes to/from I-5) provide more detail on directions of travel. Traffic exiting southbound I-5 at this location during the PM peak hour included 465 vehicles turning westbound to Northgate Way and 480 vehicles turning eastbound to Northgate Way. The westbound Northgate Way traffic entering the on-ramp to southbound I-5 was also 480 vehicles during the PM peak hour. Similar to the Northgate Way corridor east of I-5, approximately 70 to 80 percent of the volumes on Northgate Way at Corliss Avenue N. were oriented to east-west movements.

Table E-3
Average Weekday Daily Traffic Volumes Approaching Intersections,
Northgate Way Corridor West of I-5

Intersection	Direction	1988 Avg. Weekday Volumes	1997 Recorded Weekday Volumes	Percent Change Since 1988	Percent Change, all approaching volumes
N'gate Way/Meridian Ave. N.	NB	7,026	5,909	-16%	-2%
	SB	7,132	6,156	-14%	
	EB	12,299	12,619	3%	
	WB	20,492	21,429	5%	
Location	**Direction**	**1993 Avg. Weekday Volumes**	**1998 Recorded Weekday Volumes**	**Percent Change Since 1993**	**Percent Change, all approaching volumes**
Northgate Way, west of	EB	14,611	14,646	+0.2%	-2%
Ashworth Ave. N.	WB	13,724	13,168	-4%%	

Table E-4
PM Peak Hour Traffic Volumes Approaching Intersections,
Northgate Way Corridor West of I-5

Intersection	Direction	1988 Avg. Weekday Volumes	1997 Recorded Weekday Volumes	Percent Change Since 1988	Percent Change, all approaching volumes
N'gate Way/Meridian Ave. N.	NB	721	641	-11%	-5%
	SB	530	470	-11%	
	EB	906	879	-3%	
	WB	1,536	1,513	-1%	
Location	**Direction**	**1993 PM Peak Hour Volumes**	**1998 PM Peak Hour Volumes**	**Percent Change Since 1993**	**Percent Change, east-west volumes**
Northgate Way, west of	EB	952	986	4%	0%
Ashworth Ave. N.	WB	1,088	1,052	-3%	

NE 125th/130th Street Corridor

Average Weekday Traffic Volumes

Daily traffic volumes in this northern east-west corridor of the Northgate planning area grew more than any other corridor examined in this analysis. The data indicate greater percentage traffic growth for all traffic movements generally to and from the area west of I-5 (Broadview-Bitter Lake-Haller Lake). Total 1998 average weekday traffic volumes approaching the intersections of 1st Avenue NE, 5th Avenue NE and Meridian Avenue N. with NE 130th Street increased by approximately 20 percent over 1988 volumes, with similar growth for most traffic movements in all directions (see Table E-5). Intersections east of I-5 experienced less growth in traffic: total volumes approaching the NE 125th St./Roosevelt Way intersection grew by 7 percent over 1988 volumes, and declined by 2 percent at the NE 125th Street/15th Avenue NE intersection (based on 1996 data). This pattern suggests that more residential and commercial growth has occurred west of I-5 (Broadview, Bitter Lake, Haller Lake) than east of I-5 (Lake City), generating more through traffic volumes to and from the west and northwest.

PM Peak Hour Volumes

The PM peak hour traffic volumes followed the daily traffic pattern of more growth on streets serving areas west of I-5, and little or no growth in peak hour volumes for areas east of I-5. Total approaching PM peak hour volumes at intersections along NE 130th Street increased by 1 to 5 percent between 1988 and 1998, while intersections along NE 125th Street experienced 2 to 4 percent less PM peak hour traffic than in 1988 (see Table E-6). This low growth in peak hour traffic along with more substantial growth in daily traffic volumes suggests that traffic has grown more during off-peak times.

Table E-5
Average Weekday Daily Traffic Volumes Approaching Intersections,
NE 125th and 130th Streets Corridor

Intersection	Direction	1988 Avg. Weekday Volumes	1996 & 1998 Recorded Weekday Volumes	Percent Change Since 1988	Percent Change, all approaching volumes
NE 130th St./1st Ave. NE	NB	3,171	3,838	21%	+20%
	SB	3,268	3,428	5%	
	EB	9,695	11,985	24%	
	WB	11,554	14,053	22%	
NE 130th St./5th Ave. NE/ Roosevelt Way	NB	11,731	14,592	24%	+20%
	SB	2,609	2,645	1%	
	EB	7,173	9,023	26%	
	WB	9,580	10,968	14%	
NE 125th St./Roosevelt Way	NB	2,266	2,193	-3%	+7%
	SB	NA	NA	NA	
	EB	10,813	12,007	11%	
	WB	11,074	11,621	5%	
NE 125th St./15th Ave. NE	NB	9,413	9,036(96)	-4%	-2%
	SB	9,366	8,434(96)	-10%	
	EB	9,871	10,484(96)	6%	
	WB	10,406	10,497(96)	1%	

Table E-6
PM Peak Hour Volumes Approaching Intersections,
NE 125th and 130th Streets Corridor

Intersection	Direction	1988 PM Peak Hour Volume	1996 & 1998 PM Peak Hour Volume	Percent Change Since 1988	Percent Change, all approaching volumes
NE 130th St./1st Ave. NE	NB	519	460	-11%	+5%
	SB	245	258	5%	
	EB	787	907	15%	
	WB	1,077	1,129	5%	
NE 130th St./5th Ave. NE/ Roosevelt Way	NB	1,214	1,265	4%	+1%
	SB	186	187	1%	
	EB	661	744	13%	
	WB	852	760	-11%	
NE 125th St./Roosevelt Way	NB	280	254	-9%	-2%
	SB	NA	NA	NA	
	EB	963	994	3%	
	WB	832	786	-6%	
NE 125th St./15th Ave. NE	NB	1,449	1,294(96)	-11%	-4%
	SB	554	582(96)	5%	
	EB	954	984(96)	3%	
	WB	872	828(96)	-5%	

5th Avenue NE Corridor

Average Weekday Traffic Volumes

Traffic did not grow evenly along this corridor between 1988 and 1998 (see Table E-7). Total average weekday volumes approaching 5th Avenue NE/Northgate Way showed no growth between 1988 and 1998, and total volumes approaching the 5th Avenue NE/NE 103rd Street were 5 percent less in 1998 than 1988. However, as noted above, traffic approaching the 5th Avenue NE/NE 130th Street intersection increased by 20 percent, probably due to northwest-oriented traffic volumes.

PM Peak Hour Volumes

The patterns of change in PM peak hour traffic along 5th Avenue NE between 1988 and 1998 were similar to the changes in daily traffic. However, the PM peak hour traffic experienced greater percentage declines (or smaller gains) than the average weekday traffic (see Table E-8). Total PM peak hour volumes approaching 5th Avenue NE/Northgate Way declined by 10 percent from 1988 volumes, and volumes approaching 5th Avenue NE/NE 103rd Street declined by 16 percent (based on 1996 and 1998 data).

The 1998 Transpo data show a continuing pattern of lesser PM peak hour traffic volumes at the intersections of 5th Avenue NE with NE 100th Street and NE 103rd Street, and no change in overall approaching peak hour traffic at 5th Avenue NE/Northgate Way between 1996 and 1998.

Table E-7
Average Weekday Daily Traffic Volumes Approaching Intersections, 5th Avenue NE Corridor

Intersection	Direction	1988 Avg. Weekday Volumes	1996 & 1998 Recorded Weekday Volumes	Percent Change Since 1988	Percent Change, all approaching volumes
NE 130th St./5th Ave. NE/ Roosevelt Way	NB	11,731	14,592	24%	+20%
	SB	2,609	2,645	1%	
	EB	7,173	9,023	26%	
	WB	9,580	10,968	14%	
Northgate Way/5th Ave. NE	NB	8,770	7,347	-16%	+0.1%
	SB	4,072	4,293(96)	5%	
	EB	14,364	14,759(96)	3%	
	WB	16,250	17,119	5%	
NE 103rd St./5th Ave. NE	NB	5,743	5,509(96)	-4%	-5%
	SB	5,024	6,063(96)	21%	
	EB	4,949	3,989(96)	-19%	
	WB	1,886	1,201(96)	-36%	
NE 100th St./5th Ave. NE	NB	4,688	4,718(96)	1%	7%
	SB	5,491	5,763(96)	5%	
	EB	2,441	3,123(96)	28%	
	WB	324	271(96)	-16%	

Table E-8
PM Peak Hour Volumes Approaching Intersections, 5th Avenue NE Corridor

Intersection	Direction	1988 PM Peak Hour Volume	1996 & 1998 PM Peak Hour Volume	Percent Change Since 1988	Percent Change, all approaching volumes
N. 130th St./5th Ave. NE/ Roosevelt Way	NB	1,214	1,265	4%	+1%
	SB	186	187	1%	
	EB	661	744	13%	
	WB	852	760	-11%	
Northgate Way/5th Ave. NE	NB	1,259	883	-30%	-10%
	SB	343	348(96)	1%	
	EB	1,203	1,139(96)	-5%	
	WB	1,119	1,155	3%	
NE 103rd St./5th Ave. NE	NB	703	596(96)	-15%	-16%
	SB	420	467(96)	11%	
	EB	722	505(96)	-30%	
	WB	135	98(96)	-27%	
NE 100th St./5th Ave. NE	NB	552	420(96)	-24%	+2%
	SB	487	507(96)	4%	
	EB	311	446(96)	43%	
	WB	25	25(96)	0%	

Roosevelt Way Corridor and Pinehurst Way

Average Weekday Traffic Volumes

Traffic along this corridor indicates moderate traffic growth north of Northgate Way, little change south of Northgate Way, and moderate eastbound traffic growth approaching Roosevelt Way (see Table E-9). Average weekday traffic volumes on Roosevelt Way between NE 115th and NE 125th increased by approximately 17 percent in each direction since 1988. Data are not available to directly compare specific locations along Roosevelt Way south of Northgate Way. However, a comparison of traffic measured at two or three locations in this vicinity suggest there has been a roughly 5 percent increase in traffic along this corridor. The overall pattern of traffic growth along Roosevelt may be attributable to multifamily residential growth near Roosevelt Way/NE 125th Street and increased local traffic to and from the Northgate core for shopping trips.

PM Peak Hour Volumes

Total PM peak hour volumes approaching Roosevelt Way/Northgate Way NE increased by 8 percent between 1988 and 1998, with moderate growth in each travel direction except for northbound traffic, which moderately declined (see Table E-10). This pattern is generally comparable to the trends in daily traffic discussed above. In other portions of the Roosevelt Way corridor, there was almost no change between 1988 and 1998 PM peak hour volumes.

Table E-9
Average Weekday Daily Traffic Volumes Approaching Intersections,
Roosevelt Way Corridor and Pinehurst Way

Intersection	Direction	1988 Avg. Weekday Volumes	1998 Recorded Weekday Volumes	Percent Change Since 1988	Percent Change, all approaching volumes
NE 130th St./5th Ave. NE/	NB	11,731	14,592	24%	
Roosevelt Way	SB	2,609	2,645	1%	+20%
	EB	7,173	9,023	26%	
	WB	9,580	10,968	14%	
NE 125th St./Roosevelt Way	NB	2,266	2,193	-3%	
	SB	NA	NA	NA	+7%
	EB	10,813	12,007	11%	
	WB	11,074	11,621	5%	
Pinehurst Way at NE 115th St.	NE-bound	5,299	4,645	-12%	
	SW-bound	5,947	5,263	-12%	-12%
15th Ave. NB at Pinehurst	NB	4,010	3,965(97)	-1%	

Table E-10
PM Peak Hour Volumes Approaching Intersections,
Roosevelt Way Corridor and Pinehurst Way

Intersection	Direction	1988 PM Peak Hour Volume	1998 PM Peak Hour Volume	Percent Change Since 1988	Percent Change, all approaching volumes
NE 130th St./5th Ave. NE/	NB	1,214	1,265	4%	
Roosevelt Way	SB	186	187	1%	+1%
	EB	661	744	13%	
	WB	852	760	-11%	
NE 125th St./Roosevelt Way	NB	280	254	-9%	
	SB	NA	NA	NA	-2%
	EB	963	994	3%	
	WB	832	786	-6%	
Pinehurst Way at NE 115th St.	NE-bound	810	602	-26%	
	SW-bound	362	396	9%	-15%
15th Ave. NB at Pinehurst	NB	640	581(97)	-9%	

15th Avenue NE Corridor

Average Weekday Traffic Volumes

Average weekday traffic volumes along this corridor indicate little traffic growth in areas near the NE 125th Street intersection, moderate growth (10 to 17 percent) in northbound and southbound volumes to/from Maple Leaf residential areas, and moderate growth (24 percent) in southbound volumes at 15th Avenue NE/Northgate Way.

PM Peak Hour Volumes

Total 1998 PM peak hour volumes approaching key intersections along the 15th Avenue NE corridor changed very little from 1988 volumes. Total PM peak hour volumes approaching the intersections of 15th Avenue NE/NE 125th Street and 15th Avenue NE/Lake City Way each declined by 2 percent from 1988 volumes, and there was essentially no change at 15th Avenue NE/Northgate Way.

NE 92nd, 100th and 103rd Street Vicinity

Average Weekday Traffic Volumes

These streets are located nearby to the south of the Mall, serving the Mall, office areas, and in the case of NE 92nd Street, serving as an east-west connection across I-5 for residential and commercial-oriented traffic. The available data from 1995 and 1996 indicate notable increases in volumes of movements along NE 100th and decreases in volume along NE 103rd Streets between 1st Avenue NE and 5th Avenue NE. The pattern indicates the greatest amount of traffic growth since 1988 has occurred for movements along 1st Avenue NE and NE 100th Street (see Table E-11). This traffic growth is most likely related to a combination of Transit Center-related and other commuter traffic, and the traffic generated by office and health care uses south of NE 100th Street.

Data have been infrequently collected for the NE 92nd Street corridor, primarily during 1992, 1993 and 1994. The data indicate growth in daily traffic volumes at the NE 92nd Street/1st Avenue NE intersection. It is expected that residential growth over the last five years in the Green Lake, Aurora-Licton, Greenwood and Maple Leaf neighborhoods have contributed to the traffic growth trend along NE 92nd Street, but recent data are not available from City automatic traffic count sources. Not enough data are available from the NE 92nd Street/5th Avenue NE intersection to evaluate traffic trends.

Table E-11
Average Weekday Daily Traffic Volumes Approaching Intersections, NE 100th and 103rd Streets Vicinity

Intersection	Direction	1988 Avg. Weekday Volumes	1995/1996 Recorded Weekday Volumes	Percent Change Since 1988	Percent Change, all approaching volumes
NE 100th St./1st Ave. NE	NB	2,319	3,213(95)	39%	+39%
	SB	4,928	7,172(95)	46%	
	EB	NA	NA	NA	
	WB	2,290	2,833(95)	24%	
NE 103rd St./1st Ave. NE	NB	5,368	6,071	13%	+3%
	SB	6,501	6,650	2%	
	EB	NA	NA	NA	
	WB	3,909	3,558	-9%	
NE 100th St./5th Ave. NE	NB	4,688	4,718	1%	+7%
	SB	5,491	5,763	5%	
	EB	2,441	3,123	28%	
	WB	324	271	-16%	
NE 103rd St./5th Ave. NE	NB	5,743	5,509	-4%	-5%
	SB	5,024	6,063	21%	
	EB	4,949	3,989	-19%	
	WB	1,886	1,201	-36%	

Table E-12
PM Peak Hour Volumes Approaching Intersections, NE 100th and 103rd Streets Vicinity

Intersection	Direction	1988 PM Peak Hour Volume	1995/1996 PM Peak Hour Volume	Percent Change Since 1988	Percent Change, all approaching volumes
NE 100th St./1st Ave. NE	NB	287	284(95)	0%	+20%
	SB	441	592(95)	34%	
	EB	NA	NA	NA	
	WB	294	353(95)	20%	
NE 103rd St./1st Ave. NE	NB	689	668	-3%	-3%
	SB	438	412	-6%	
	EB	NA	NA	NA	
	WB	312	314	0%	
NE 100th St./5th Ave. NE	NB	552	420	-24%	+2%
	SB	487	507	4%	
	EB	311	446	43%	
	WB	25	25	0%	
NE 103rd St./5th Ave. NE	NB	703	596	-15%	-16%
	SB	420	467	11%	
	EB	722	505	-30%	
	WB	135	98	-27%	

PM Peak Hour Volumes

The available City traffic count data from 1995 and 1996 indicate a pattern of change in PM peak hour volumes that is similar to the pattern in daily traffic, with moderate percentage growth in traffic along 1st Avenue NE and NE 100th Street, and decreases along NE 103rd Street (see Table E-12). This pattern suggests that afternoon commuter traffic, along with traffic generated by office and health care uses south of NE 100th Street, are this area's primary traffic generators during the PM peak hour.

The 1998 PM peak hour traffic counts by Transpo are similar to the 1995 City traffic counts in overall approach volumes on 1st Avenue NE at NE 100th Street and NE 103rd Street. The turning movement data help verify the influence of commuter traffic leaving the express lane off-ramp, as well as the contributions of commercial/office traffic generated just south of NE 100th Street, Mall-related ingress/egress traffic, and traffic to and from the on-ramps and off-ramps at NE 107th Street/1st Avenue NE.

Based on the 1998 traffic counts by Transpo, the overall approaching volumes during the PM peak hour at NE 92nd Street/1st Avenue NE remained nearly the same as in 1988, and the overall approaching volumes at NE 92nd Street/5th Avenue NE decreased by approximately 17 percent. The data indicate greater use of 1st Avenue NE as a southbound route, and lesser use of 5th Avenue NE as a northbound route. These trends are generally consistent with the other data collected at locations further to the north on 1st and 5th Avenues NE.

Average Annual Weekday Daily Traffic Data

Average annual weekday daily traffic (AAWDT) volume data are shown here from seven locations in the Northgate core area. These data are "seasonally adjusted", meaning they are mathematically adjusted to remove seasonal variations. This results in a reliable portrayal of "average" conditions that is more comparable than traffic counts taken at different times in the year. Table E-13 compares 1993, 1996 and 1998 data that show the total of traffic volumes in both directions. These data indicate 8-11 percent more traffic at specific locations on Northgate Way since 1993, which is equivalent to about 1.5-2 percent growth annually.

Table E-13
Average Annual Weekday Daily Traffic Data at Selected Locations

Street	Location	1993	1996	1998	Pct. Chg. Since 1993
NE Northgate Way	East of 5th Ave. NE	30,700	29,100	33,300	8%
NE Northgate Way	East of Roosevelt Way	16,800	17,200	18,600	11%
5th Avenue NE	South of Northgate Wy	14,600	13,200	13,900	-5%
5th Avenue NE	North of Northgate Wy	9,100	9,200	9,400	3%
Roosevelt Way NE	Near NE 130th/5th Ave	21,500	21,000	21,600	0.5%
Roosevelt Way NE	South of Northgate Wy	10,000	10,300	10,600	6%
Pinehurst Way NE	East of Roosevelt Way	10,600	10,500	10,600	0%

Source: SEATRAN, 2000.

I-5 Off-Ramp, On-Ramp and Through Traffic

PM Peak Hour Volumes

The 1998 PM peak hour traffic counts by Transpo describe the volumes generated by the off-ramps and on-ramps in the Northgate core area, including the express-lane off-ramp at NE 103rd Street, the northbound I-5 off-ramp and on-ramp at NE 107th Street, the northbound on-ramp north of Northgate Way, and the southbound on-ramp and off-ramp at Corliss Avenue N., west of I-5.

The express-lane off-ramp 1998 PM peak hour volume was 555 vehicle trips entering the 1st Avenue NE/NE 103rd Street intersection, while the mainline off-ramp at NE 107th Street accommodated 865 vehicle trips during the peak hour. Approximately 775 vehicle trips entered the mainline I-5 on-ramp at NE 107th Street during the PM peak hour. Traffic exiting or entering the Mall lot directly to/from the ramps included 150 off-ramp trips and 85 on-ramp trips at NE 107th Street.

Data from the Washington State Department of Transportation (WSDOT) provides additional information about ramp volumes, but does not provide enough information to compare to Transpo's counts, due to construction interrupting traffic monitoring in the vicinity. Data from 1990, 1994 and 1996 indicate that the express-lane off-ramp peak hour volumes ranged from 725 to 860 vehicles, more than measured by Transpo. Data from the same period (and 1998) indicate that the mainline I-5 northbound off-ramp accommodated approximately 900 to 1,100 vehicle trips during the PM peak hour. Available data suggest a growth trend in average daily ramp volumes entering/exiting at 1st Avenue NE since 1990, but growth trends are not apparent for other on-ramp/off-ramp movements to/from southbound I-5. The addition of the on-ramp at NE 107th Street has eliminated the necessity of northbound traffic traveling through the Northgate Way/1st Avenue NE intersection to reach an on-ramp.

I-5 Through Traffic Volumes

Available data indicate a growth trend in I-5 through volumes near Northgate: northbound average daily volumes (at a location just south of the Mall) increased from approximately 82,000 to 84,500 vehicles per day between 1990 and 1996, and southbound average daily volumes increased from approximately 89,000 to 101,000 vehicles per day in the same period.

Changes in Screenline Volume-to-Capacity Ratios in the Northgate Vicinity

The City uses a "screenline" methodology to analyze changes in traffic volumes and congestion over time. A screenline is a line drawn perpendicular to a collection of parallel arterials; it allows analysis of all traffic moving through an area in a given direction, to compare total traffic volumes to total road capacity. It allows for the fact that some travelers will choose among several routes depending on traffic conditions. The City uses the volume-to-capacity (v/c) ratio to measure traffic congestion at a broad citywide level. When traffic uses 100 percent of the road capacity in a given time period (usually the peak hour of traffic), the v/c ratio equals 1.0. For a majority of the City's screenlines, a v/c ratio of 1.0 is the Comprehensive Plan's level of

service (LOS) standard for maximum acceptable traffic congestion. For other major commuting routes, the City sets a higher LOS standard of a 1.20 v/c ratio, meaning that peak traffic may exceed the theoretical capacity of the road by 20 percent. The City uses computer modeling based on actual traffic volumes to predict future traffic conditions with expected growth.

Two screenlines measure east-west traffic through the Northgate core. Screenline 13.11 is drawn between Northgate Way and NE 145th Street, and Screenline 13.12 is drawn between NE 65th Street and NE 80th Street, both to measure east-west flows. Modeling done for the City's 1994 Comprehensive Plan indicated that the v/c ratios in 1990 for these screenlines ranged from 0.53 to 0.72 for the northern screenline, and 0.44 to 0.47 for the southern screenline (see Table E-14). This indicates a moderate amount of east-west road capacity was available even during PM peak hour traffic. The Comprehensive Plan also modeled v/c ratios for 2010 assuming the urban village strategy (the current City Comprehensive Plan) and other alternative strategies the City could have used. With the urban village strategy and achievement of population and employment growth targets, the computer model predicts that overall east-west road capacity for both screenlines in 2010 will be nearly the same as 1990, with only a two percent increase in use of the road capacity.

Three screenlines measure north-south traffic in the larger area between Green Lake and the city limit at NE 145th Street. The screenline at NE 145th Street extends between Meridian Avenue N. and 15th Avenue NE. At this screenline, the 1990 v/c ratio was 0.76 and 0.31 for northbound and southbound traffic during the PM peak hour. This indicates use of three-quarters of road capacity for the north-south routes in this vicinity. With the urban village strategy, the computer modeling predicts that by 2010, the v/c ratios will increase to 0.86 and 0.36 for northbound and southbound traffic. This would use a portion of the remaining road capacity but would not exceed the threshold of a 1.20 v/c ratio. The other two screenlines are located at NE 80th Street, one between Linden Avenue N. and 1st Avenue NE (west of I-5), and the other between 5th Avenue NE and 15th Avenue NE (east of I-5). For these screenlines, the v/c ratios for northbound movements in 1990 were 0.51 and 0.75, respectively, indicating moderate use of road capacity. With the urban village strategy, the computer modeling predicts that by 2010, the v/c ratios will increase to 0.65 and 0.81, respectively.

The City also defined two smaller screenlines that allow closer examination of the north-south and east-west traffic volumes in the Northgate core. These screenlines are not used to determine consistency with the City's level-of-service standards. The line for east-west traffic is defined just east of 1st Avenue NE between NE 100th Street and Northgate Way. The line for north-south traffic is defined just south of Northgate Way from west of Meridian Avenue N. to Roosevelt Way. For east-west traffic, the computer model predicts that the 2010 PM peak hour v/c ratio will be 0.69 for eastbound traffic and 0.44 for westbound traffic. These ratios likely reflect the available east-west capacity that remains on NE 100th Street and NE 103rd Street (west of 5th Avenue NE), as well as any remaining capacity on Northgate Way. For north-south traffic, the predicted 2010 PM peak hour v/c ratio is 0.51 for northbound traffic and 0.47 for southbound traffic. This indicates a moderate amount of remaining capacity for north-south peak hour traffic when considering all of the available north-south routes.

Graphic:

Screenlines for Traffic Forecast Analysis

The computer model for screenline analysis is not available for this study. Based on data from 1996, 1997 and 1998, the northbound PM peak hour volumes approaching Northgate Way intersections with Meridian Avenue N., 1st Avenue NE, 5th Avenue NE, and Roosevelt Way declined approximately 20 percent since 1988. These volumes are the main north-south routes covered in the smaller Northgate screenline. It can be inferred that a calculation of v/c ratios for the north-south Northgate screenline would show a lower ratio today than for 1988 or 1990. This means that the current peak hour north-south traffic volumes are using less of the overall road capacity than ten years ago. It can also be inferred that east-west traffic volumes are generating v/c ratios no worse and probably better than predicted for the 2010 PM peak hour, because only a relatively small fraction of residential and commercial growth projected by the 1994 Comprehensive Plan has occurred.

Table E-14
1990 and 2010 Predicted Traffic Volume-to-Capacity Ratios for Northgate Screenlines

ID#	Screenline Location	Segment	Direction	1990 V/C Ratio	2010 V/C Ratio
East-West					
13.11	East of 5th Ave. NE	Northgate Way to NE 145th St.	EB	0.72	0.74
			WB	0.53	0.61
13.12	East of 5th Ave. NE	NE 65th St. to NE 80th St.	EB	0.44	0.46
			WB	0.47	0.49
North-South					
1.12	North City Limit	Meridian Ave. N. to 15th Ave. NE	NB	0.76	0.86
			SB	0.31	0.36
6.13	South of N. 80th St.	Linden Avenue N. to 1st Avenue NE	NB	0.51	0.65
			SB	0.39	0.48
6.14	South of NE 80th Street	5th Avenue NE to 15th Avenue NE	NB	0.75	0.81
			SB	0.60	0.36
Northgate Screenline					
A11 (N-S)	South of Northgate Way	West of Meridian Ave. to Roosevelt Way NE	NB	--	0.51
			SB	--	0.47
A12 (E-W)	East of 1st Avenue NE	NE 100th Street to Northgate Way	EB	--	0.69
			WB	--	0.44

Source: Seattle's Comprehensive Plan, 1994.

Transit Service

The following information was provided by King County Metro staff in response to the draft Matrix for the Northgate Area Comprehensive Plan, September 1998. The information clarifies how services and routes changed, whether or not Northgate Plan recommendations were met or exceeded, and brief rationales as to why requested service changes have not been provided. Most entries begin with status prior to Northgate Plan, and what the Plan recommended.

Notes: Service levels are depicted in headways, or minutes between buses, by time period. So, 30/30/60/30/60 implies a 30-minute headway is provided during the peaks, mid-day, and Saturday time periods and an hourly headway is provided on nights and Sundays. The shorthand corresponds to time periods as follows: peak/mid-day/nights/Saturday/Sunday. Abbreviations include: NTC = Northgate Transit Center; SCC = Shoreline Community College; NSCC = N. Seattle Community College; CBD = Central Business District; AVTC = Aurora Village Transit Center; LINK = light rail system; SYP = Six-Year Plan

Route 5, Seattle CBD, Phinney Ridge, SCC or NTC; through-routed with Routes 54, 55.

- June 1992, one of two north end branches serves NTC: 30/30/--/30/--.
- Plan recommended addition of Sunday service and longer weekday span.
- In September 1998, re-routed past NSCC to provide 15-minute combined headway with Ballard route between Greenwood Avenue North and NTC.
- Sunday service not provided.
- Rationale for not implementing Plan change: limited budget.

Route 16, Seattle CBD, Seattle Center east, Wallingford, Meridian, Green Lake, and NSCC

- June 1992, 20-30/30/30Sh/30/30; through routed with Route 21.
- Plan recommended re-route to North 92nd Street.
- In September 1998, through route broken and southern terminal established at Colman Dock for improved reliability.
- In February 1999, service level improved to 20/20/30/20/30 and night shuttle replaced with through service. This is better service than requested by the Plan.
- In June 1999, off-peak direction peak period I-5 trips deleted.
- Rationale for not implementing Plan change in routing: resistance from riders who wanted direct connection to NSCC, Meridian Avenue North, and Mall.

Route 62, Magnolia, Ballard, Oak Tree, and NSCC

- June 1992, 30/60/--/60/--.
- Plan recommended deletion of Magnolia service and improvement in service level to 15/30/?/30/30.
- 1996: Six-Year Plan funds used to improve mid-day headway to 30 minutes.
- In September 1998, Route 75 absorbed NTC to Ballard portion of Route 62 and service level improved to 30/30/60/30/60; with re-route of Route 5 NTC branch, 15-minute service provided along corridor between Greenwood and NTC; Magnolia branch deleted.
- In Spring 1999, SEATRAN installed traffic control at College Way North and North 92nd St. intersection, improving transit speed and reliability for this route and routes 16, 5, and 318.

Route 65, Lake City, Wedgwood, and UW Campus

- June 1992, peak-only route.
- Plan recommended become full-time route, oriented to NTC, with hourly mid-day and Saturday headways.
- In September 1998, became full-time route with a 15-minute headway in peak period in peak directions; base trips are through route with Route 67 for efficiency and connectivity.

- Rationale for not implementing Plan change in routing: limited budget and greater focus on service frequency as opposed to one-seat connections. Service levels are better than recommended in Plan. LINK network could consider extending service to NTC.

Route 67, NTC, Roosevelt, and UW Campus

- June 1992: new route.
- In June 1997, made full-time weekday service, schedule 15 minutes apart from new Route 66, to provide 15-minute service to corridor; interlined at common northern terminal with Route 66 in Northgate. Park-and-ride lot, with loss of stalls.
- In September 1998, through-routed with new full-time Route 65; interline broken; and, additional trips added in peak to address overloads.
- Service requested in Plan is exceeded.

Route 68, NTC, Maple Leaf, University Village, and UW Campus

- June 1992, 60/60/--/--
- Plan recommended improvement to 30/30/30 service level and re-route to Ravenna Avenue NE, Lake City Way NE, and NE Northgate Way to serve Victory Heights.
- Before September 1998, improved to 30/60/--/60/--. Through-routed with non-Magnolia trips of Route 62.
- In September 1998, improved to 30/30/--/30/--. Through-routed with new Route 31, Magnolia, Fremont, and University District cross-town route.
- January 1998 tabloid offered option of deleting route to invest in more frequency on new Route 63 between Lake City and University District.
- Riders of routes 68 and 72 protested concept and it was not included as part of the Executive recommendation.

Route 69

- Plan proposed as new Seattle CBD route, NTC, Maple Leaf, and Roosevelt; 15-20/30/30/30/30.
- In June 1997, implemented as new Route 66 between NTC and Seattle CBD via 5th Avenue NE, Roosevelt couplet, and limited stop on Eastlake Avenue East.
- Broke routes 302 and 305 for improved reliability.
- Interlined with Route 67 until September 1998.
- Rationale for not implementing Plan change in routing: saved operating time by remaining on 5th Avenue NE, avoided congestion on NE Northgate Way, and served dense area along 5th Avenue NE.

Route 73, Downtown Seattle Transit Tunnel, Univ. District, Maple Leaf, & Jackson Park

- In 1992, route did not serve NTC.
- In September 1998, weekday afternoon service levels improved to address high demand and overloads.
- Rationales for not implementing Plan change in routing: lack of budget to add to Route 377 service north of NE Northgate Way and perceived opposition to transfers imposed upon University District-bound riders that reside north of NE Northgate Way. Routing will be considered with LINK network.

Route 75, Lake City, Sand Point, and UW Campus.

- In 1992, route did not serve NTC.
- Plan recommended extension to NTC via existing routing on NE 125th Street.
- In June 1997, routing shifted to NE Northgate Way from NE 125th Street; service level limited by City due to street agreement. This provided coverage to Victory Heights, for which Plan suggested revised Route 68.
- In June 1997, to mitigate deletion of Route 75 Express and Route 41 Sand Point trips, 15-minute Lake City turnback trips were added. These trips do not extend to NTC, and if did, would exceed street [weight] limit.
- In September 1998, extended to Ballard to absorb Route 62.

Routes 302 and 305, Richmond Beach, northwest Seattle, 5th Avenue NE, NTC, Roosevelt, Eastlake, and Seattle CBD

- In 1992, provided common 30/30/30/30/30 service to NE 125th Street. Hourly service provided on northern ends.
- Plan suggested using I-5 north of NTC and splitting route at NTC.
- In September 1995, with formation of Route 315, northern terminal was shifted to AVTC from Richmond Beach.
- In June 1997, with creation of Route 66, route was split at NTC.
- In June 1997, routes were consolidated on more productive Route 302 pattern and Route 305 pattern deleted.
- In September 1997, with creation of new Route 318, Route 302 served Four Freedoms only on nights and weekends.
- Rationale Plan was not implemented: Route 315 was implemented.
- In near future, routing via NSCC under consideration.

Route 307, Northshore, Lake City, NTC, I-5, and Downtown Seattle Transit Tunnel.

- In 1992, route had Bothell and Woodinville tails
- In June 1997: Bothell tail deleted; off-peak direction peak period headway improved to 15-minutes; interlined with Woodinville trips of Route 312; 15-minute weekday pulse provided at NTC with alternate mid-day trips of Route 41; extended to Atlantic Base to mitigate deletion of service formerly provided by diesel routes 70 & 74, as Route 70 is to be electrified.

Route 315, Richmond Beach, Shoreline, 5th Avenue NE, and NTC

- First implemented September 1995.
- Not anticipated in Plan.
- Service frequency and span gradually improved during SYP implementation; now almost equal to that of routes 302, 317, and 377 at 30/30/60/30/60.

Route 317, Shoreline, Haller Lake, and NTC

- In 1992, 30/60/60/60/60; with peak period service to Seattle CBD via 5th and Cherry ramp.
- Plan recommended routing past NSCC and service level improvements.
- Before June 1997, service level improved to 30/30/60/30/60.

- In June 1997, service extended to Edmonds CBD and removed from Ronald and approach to NTC changed to 1st Avenue NE.
- February 1999, off-peak direction trips on I-5 deleted.
- Rationale Plan was not implemented: speed? Routing via NSCC under consideration. Will consider deletion of peak period Seattle CBD extensions.

Route 318, Four Freedoms, Northwest Hospital, NSCC, and NTC
- First implemented September 1998; provides service level of 30/30/--/--/--.
- Not anticipated in Plan.
- Subsidized by federal grant, partners, and Metro.

Route 360, Aurora Avenue North express overlay service to Seattle CBD
- In 1992, peak-only Aurora to downtown service.
- In February 1999, route deleted under Aurora consolidation.
- Rationale Plan was not implemented: lack of budget and better service concept. Improved connections to NTC from Aurora are provided by Routes 5, 75, 302, 318, 315, and 317.

Route 377, Ballinger Terrace, North City, Ridgecrest, Jackson Park, and NTC
- In 1992, 30/60/60/60/60; peak period service to Seattle CBD via 5th and Cherry ramp.
- Plan recommended improved midday headway to mitigate loss of Route 73 to Jackson Park.
- In June 1997: route extended to Lynnwood Park-and-Ride; peak patterns consolidated; and Ridgecrest jog deleted.
- February 1999, off-peak direction trips on I-5 deleted.
- Shoreline routing shifted with routes 315 and 314.

December 1999 Information Regarding Possible Changes in Service with I-695 Cuts

King County Metro developed a sample year 2002 transit service network for the worst case outcome of no replacement local option revenue. Service cutbacks might focus on lower ridership time periods, such as nights and weekends. Decisions have not yet been made. There will be substantial decisionmaking processes before possible June 2000 and September 2000 cuts and even more before cuts that would occur in June 2001. Depending on details of the State's budgeting, it is possible that some February 2000 transit service cuts will be avoided.

The sample transit service network formulated by Metro staff suggests significant restructuring of service in the NTC service area.
- Route 307 would be deleted and replaced by an improved Route 41 extended to Lake City;
- Route 16 Local would become a 15-minute service and use the backdoor routing via NE 92nd Street; Route 16 Express would be deleted.
- Routes 302 and 317 would be restructured to serve the NSCC and Northwest Hospital areas via Meridian Avenue N.;
- Route 67 would also become a 15-minute route; Route 66 would be deleted.
- Route 315 would be deleted.
- Routes 317 and 377 would be restructured in Shoreline to provide coverage to areas losing service with deletion of Route 315; they would no longer extend into Snohomish County.

- The I-5 segments of routes 317 and 377 between the NTC and the 5th and Cherry ramp would be deleted; downtown-oriented riders would shift to Route 41 and the DSTT.
- The connection between the NTC and Ballard would be deleted (routes 62/75).

Metro will confer with policymakers, jurisdiction staff, and citizens about these possible changes over the next few months.